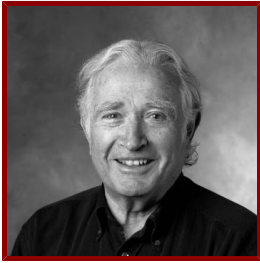


Stanford



Bernard Roth

Rodney H. Adams Professor in the School of Engineering
Mechanical Engineering

Bio

BIO

Roth is one of the founders of the Hasso Plattner Institute of Design at Stanford (the d.school) and is active in its development: currently, he serves as Academic Director. His design interests include organizing and presenting workshops on creativity, group interactions, and the problem solving process. Formerly he researched the kinematics, dynamics, control, and design of computer controlled mechanical devices. In kinematics, he studied the mathematical theory of rigid body motions and its application to the design of machines.

ACADEMIC APPOINTMENTS

- Professor, Mechanical Engineering
- Member, Maternal & Child Health Research Institute (MCHRI)

HONORS AND AWARDS

- Outstanding Design Educator Award, ASME (2000)
- Pioneer in Robotics Award, IEEE (2000)
- Honorary Professor, Design Program, IIT-Kanpur, India
- Honorary Diploma, Engineering Mechanics, National Technical University of Ukraine (2003)
- Honoris Causa degree, University of Cassino, Italy (2005)
- Honorary Co-chair, International Conference on Robotics and Automation (2007)
- Honorary PhD, University of Paris (Pierre & Marie Curie) (2007)

PROFESSIONAL EDUCATION

- PhD, Columbia , Mechanical Engineering (1963)

Teaching

COURSES

2022-23

- Advanced Kinematics: ME 330 (Win)
- The Designer in Society: ME 315 (Win, Spr)
- Transformative Design: ENGR 231 (Spr)

2021-22

- Kinematic Synthesis of Mechanisms: ME 322 (Win)

- The Designer in Society: ME 315 (Win, Spr)
- Transformative Design: ENGR 231 (Aut)

2020-21

- Advanced Kinematics: ME 330 (Win)
- The Designer in Society: ME 315 (Win, Spr)
- Transformative Design: ENGR 231 (Aut)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Lawrence Domingo

Master's Program Advisor

Chih-Ling Chang, Kaixin Chen, Lingqi Li, Yichi Ma, Kyra Pelton, Michael Phan, Naveen Ravindar, Lauren Taylor

Doctoral (Program)

Joshua Barnett

Publications

PUBLICATIONS

- **Visualising professional vision interactions in design reviews** *CODESIGN-INTERNATIONAL JOURNAL OF COCREATION IN DESIGN AND THE ARTS*
Sonalkar, N., Mabogunje, A., Leifer, L., Roth, B.
2016; 12 (1-2): 73-92
- **On the advantages of instantaneous invariants and geometric kinematics** *MECHANISM AND MACHINE THEORY*
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- **Acting with Creative Confidence: Developing a Creative Agency Assessment Tool** *Design Thinking Research: Measuring Performance in Context.*
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- **I Use It Every Day: Pathways to Adaptive Innovation After Graduate Study in Design Thinking** *Design Thinking Research: Measuring Performance in Context.*
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- **Ferdinand Freudenstein** *Indian Academy of Sciences, Bangalore, India*
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2010; 15 (8): 690-698
- **Navigating the Barriers to Interdisciplinary Design Education: Lessons Learned from the NSF Design Workshop Series**
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2010
- **Large workspace haptic devices - A new actuation approach** *16th Symposium on Haptics Interfaces for Virtual Environment and Teleoperator Systems*
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IEEE COMPUTER SOC.2008: 185–192

- **Forward** *Springer Handbook of Robotics*
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edited by Siciliano, B., Khatib, O.
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- **In Memory of Professor Ferdinand Freudenstein, 1926–2006** *Journal of Mechanical Design*
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2007; 129: 241-2
- **Design Thinking** *Science of Machines (in Japanese)*
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2007; 59 (1): 149-154
- **Ferdinand Freudenstein** *Distinguished Figures in Mechanism and Machine Science: Their Contributions and Legacies*
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edited by Ceccarelli, M.
Springer Verlag, Berlin.2007: 151–181
- **Advances in Robot Kinematics, Mechanisms and Motion**
Roth, B.
edited by Lenarcic, J., Roth, B.
Springer, Dordrecht, The Netherlands.2006
- **Design Thinking**
Roth, B.
2006
- **Finding geometric invariants from time-based invariants for spherical and spatial motions** *JOURNAL OF MECHANICAL DESIGN*
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- **Design Projects** *Design News, IIT Kanpur*
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- **Playing it safe** *IEEE ROBOTICS & AUTOMATION MAGAZINE*
Zinn, M., Khatib, O., Roth, B., Salisbury, J. K.
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- **A new actuation approach for human friendly robot design** *8th International Symposium on Experimental Robotics (ISER 02)*
Zinn, M., Roth, B., Khatib, O., Salisbury, J. K.
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- **Advances in Creative Engineering and Education**
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- **Time-invariant properties of planar motions** *9th International Symposium on Advances in Robot Kinematics*
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- **Actuation Methods for Human-centered Robotics and Associated Control Challenges** *Control Problems in Robotics*
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2001
- **The Theoretical Basis for the Mechanical Aspects of Robot Design**
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 - **Formulation and Solution for the Direct and Inverse Kinematics Problems for Mechanism and Mechatronic Systems** *Computational Methods in Mechanical Systems*
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 - **Computational Advances in Robot Kinematics** *Advances in Robot Kinematics and Computational Geometry*
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 - **Analysis and Synthesis of Overconstrained Mechanisms** *Mechanism Synthesis and Analysis*
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● **New Robot Mechanisms for Robot Capabilities**

Roth, B., Khatib, O.
1991

● **On the Number of Links and Placement of Telescoping Manipulators in an Environment with Obstacles**

Roth, B., Kolarov, K.
1991

● **A General Solution of the Inverse Kinematics of All Series Chains**

Roth, B., Raghavan, M.
1991

● **The Design of a High-Performance Force-Controlled Manipulator**

Roth, B., Khatib, O., Waldron, K., J.
1991

● **REGULATION OF 5-HT₂ AND 5-HT_{1C} SEROTONIN RECEPTOR LEVELS - METHODOLOGY AND MECHANISMS** *SATELLITE WORKSHOP OF THE AMERICAN COLLEGE OF NEUROPSYCHOPHARMACOLOGY: SUBTYPES OF RECEPTORS FOR SEROTONIN AND THEIR EFFECTORS*

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- **On the Spatial Motion of a Rigid Body with Point Contact**
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- **WORKSPACE AND MOBILITY OF A CLOSED-LOOP MANIPULATOR** *INTERNATIONAL JOURNAL OF ROBOTICS RESEARCH*
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